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1: Eur J Biochem 1995 Aug 1;231 (3):602-8

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cDNA sequence and mRNA tissue distribution of a novel human matrix metalloproteinase with a potential transmembrane segment.

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The complementary DNA sequence of a novel matrix metalloproteinase was isolated from a human lung cDNA library. It consists of 3530 bp and encodes a polypeptide of 669 amino acids. In comparison to other matrix metalloproteinases, the deduced sequence of the amino acid chain exhibits closest similarity to a recently discovered membrane-type matrix metalloproteinase of 582 amino acids. Likewise, it is composed of a signal peptide, a prodomain, a catalytic domain, a hemopexin-homologous domain and a C-terminal domain. Furthermore, the novel matrix metalloproteinase shares a similar activation site with its 582-amino-acid homologue, an insertion of eight amino acids in the catalytic domain and a tract of more than 20 hydrophobic amino acids near the C-terminus. The hydrophobic structure in the C-terminal domain suggests that the novel matrix metalloproteinase is also membrane bound. When lung cell membrane fractions were probed in immunoblots with polyclonal antibodies against a recombinant fragment of the 669-amino-acid chain, a protein of M(r) 72,000 reacted preferentially with the antibodies. Northern-blot analysis demonstrated quite different tissue distributions of mRNA for the two membrane-type matrix metalloproteinases. While mRNA for the 582-amino-acid enzyme was found predominantly in lung, placenta, kidney, ovary, intestine, prostate and spleen, mRNA for the 669-amino-acid enzyme appeared to be synthesized preferentially in liver, placenta, testis, colon and intestine. Substantial amounts of the latter mRNA were also detected in pancreas, kidney, lung, heart and skeletal muscle.

MeSH Terms:

- Amino Acid Sequence
- Base Sequence
- Blotting, Western
- Cell Membrane/enzymology
- Collagenases/genetics
- DNA, Complementary
- Gelatinase A

- Gelatinases/metabolism
- Gelatinases/genetics*
- Human
- Interstitial Collagenase
- Lung/metabolism
- Metalloendopeptidases/metabolism
- Metalloendopeptidases/genetics*
- Molecular Sequence Data
- RNA, Messenger/metabolism
- RNA, Messenger/genetics
- Sequence Homology, Amino Acid
- Support, Non-U.S. Gov't

Gene Symbols:

- MMP-2

Substances:

- Interstitial Collagenase
- Gelatinase A
- Gelatinases
- Collagenases
- Metalloendopeptidases
- RNA, Messenger
- DNA, Complementary

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